

• COLORADO RIVER •  
**AQUEDUCT NEWS**

THE METROPOLITAN WATER DISTRICT



OF SOUTHERN CALIFORNIA

Vol. IV

April 10, 1937

No. 7



The Copper Basin dam site. See note page 6.



• COLORADO RIVER •  
**AQUEDUCT NEWS**  
 THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

306 WEST THIRD ST.  
 LOS ANGELES, CALIFORNIA

*Published twice monthly in the interest of Field and Office Workers on the Colorado River Aqueduct, and for the information of all other citizens of the Metropolitan Water District.*

Vol. IV April 10, 1937 No. 7

## Coxcomb Tunnel Near Completion

Work on the 17,795-foot Coxcomb tunnel neared completion last week when all but 31 feet of the invert lining had been placed. This and the East Eagle Mt. tunnel are the only contract tunnels on the main aqueduct that remain to be completed.

Excavation on the Coxcomb tunnel was started on June 22, 1933, and was completed on February 18, 1936. The placing of concrete lining in this tunnel, which is located in Division 3, was begun on November 25, 1936. Arch lining was finished on February 27, 1937.

The tunnel is being constructed by the Winston Bros. Construction Co. under the direction of General Superintendent R. V. Johnson. Concrete has been placed with a double unit machine.

At the eastern end of the tunnel there is a transition from an open canal section, via a short piece of modified conduit. This is the only location on the aqueduct where these two types of construction are in such close proximity.

Placing of the remaining 31 feet of invert will be done in connection with the construction of this modified conduit section which is 341 feet in length. The schedule also includes 122 feet of such construction at the west end of the tunnel.

The east portal of the Coxcomb has been made famous by the many pictures that have been taken of it.

William A. Bringham, in charge of the cost section of the Accounting Division, died on March 24, 1937. Mr. Bringham was born on July 24, 1888, at Beckwith, California, and had been with the District since April 23, 1934. Before coming to the District he had many years of auditing and cost experience with large construction firms including the United Engineers and Constructors, Inc., and the Dwight P. Robinson Co. He is survived by his wife.



**COMPETITION**  
 A flock of sheep (including the inevitable black one) look over a sheepfoot roller on the Cajalco dike. In the past, earthfill structures have been compacted by driving flocks of sheep back and forth on them. The sheepfoot roller was designed to give the same result mechanically.

## Directory

### BOARD OF DIRECTORS

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 Franklin Thomas, Vice-Chairman  
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 Compton.....Warren W. Butler  
 Fullerton.....Walter Humphreys  
 Glendale.....Bernard Brennan  
 Long Beach.....William M. Cook  
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 Los Angeles.....Otto J. Emme  
 Los Angeles.....D. W. Pontius  
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 Los Angeles.....W. P. Whitsett  
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 Charles H. Toll, Treasurer  
 D. W. Pontius, Controller

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General Manager and Chief Engineer.....F. E. Weymouth  
 Asst. Gen. Mgr.....J. L. Burkholder  
 Asst. Chief Engineer.....Julian Hinds  
 General Counsel.....James H. Howard  
 Asst. Gen. Counsel.....Arthur A. Weber  
 Asst. Controller.....J. M. Luney  
 General Supt.....James Munn  
 Chief Elec. Engineer.....J. M. Gaylord  
 Asst. to Gen. Mgr.....Don J. Kinsey  
 Secy. to Gen. Mgr.....Elisabeth von Hagen

### DIVISION ENGINEERS

Divisions 1 & 2.....W. E. Whittier  
 Divisions 2 & 3.....John Stearns  
 Division 4.....R. C. Booth  
 Divisions 5 & 6.....J. B. Bond  
 Distribution.....R. E. Diemer  
 Transmission.....Robert N. Allen

### SUPERINTENDENTS (Main Aqueduct Tunnels)

Coxcomb and East Iron Mt. Tunnels, Winston Bros., R. V. Johnson, Gen. Supt.  
 East Eagle Mt. Tunnel and West Eagle Mt. Tunnel, east portion, Broderick & Gordon, John Will, Gen. Supt.  
 Coachella Tunnel, Dist. Force Acct., R. C. Booth, Gen. Supt.  
 East Coachella Tunnel and 1000 Palms Tunnel, Concrete, V. T. Davis, Supt., J. C. Fisher, General Foreman.  
 West Coachella Tunnels and Conduits, Concrete, Edwin Noon, Supt.  
 San Jacinto Tunnel, District Force Acct., B. C. Leadbetter, Gen. Supt.; S. J. Shrode, John Austin and C. E. Sides, Tunnel Supts.; Chas. F. Thomas, Jr., Supt.; F. A. Backman, Gen. Foreman.

### (Distribution Tunnels)

Monrovia Tunnels Nos. 1, 2 and 3, West Construction Co., H. E. Carleton, Gen. Supt.; O. V. Humason, Peter Brisbols and Luther Dennis, Tunnel Supts. Concrete Supt., E. M. Penn.  
 Pasadena Tunnel, San Rafael Tunnels Nos. 1 and 2, and Monrovia Tunnel No. 4, L. E. Dixon Co., Bent Bros., Inc., and Johnson, Inc., S. D. Hackley and W. N. Evans, Supts.

### (Canal, Siphon, Conduit)

Schedules Nos. 1, 1A, 1B, 10, 10A, 10B, 11, 11A, 11B, 11C, 13, 13A, and 13B, Aqueduct Construction Co., S. T. Corfield, Gen. Supt.; Charles Harlowe, Jr., Excav. Supt.  
 Schedules Nos. 2, 2A, 2B, 3, 3A, 3B, 7, and 7A, Barrett & Hilp and Macco Corp.; H. W. McKinley, Supt.  
 Schedules Nos. 4, 4A, 5, and 5A, Jahn & Bressi Construction Co., Joseph Muscolo, Gen. Supt.;

Dominick Bressi, Asst. Gen. Supt. Schedules Nos. 6, 8, 8A, and 8B, Clyde W. Wood and M. J. Bevanda, A. F. Weemer, Gen. Supt.

Schedules Nos. 9, 9A, 9B, and 9C, The Utah Construction Co., Ben Arp, Gen. Supt.  
 Schedules Nos. 12 and 12A, Three Companies, Inc., John Will, Supt.

Schedules Nos. 14, 15, and 16, Thompson - Starrett Co., Inc., Rodney Smith, Gen. Supt.; William Hayes, Excav. Supt.

Schedules Nos. 18, 19, and 20, J. F. Shea Co., Inc., J. G. Shea, Gen. Mgr.; H. F. Rennebohm, Supt.

### (Distribution Pipe Line)

Schedules No. 4P and 5P, American Concrete & Steel Pipe Co., Wm. A. Whiting, Gen. Supt.; D. H. Rankin, Plant Supt. and Const. Supt.

Schedules 6P and 7P, J. F. Shea Co., Inc., J. G. Shea, Gen. Mgr.; Ed. H. Shea, Gen. Supt.  
 Schedules 10P, United Concrete Pipe Corp., John Huber, Plant Supt.; Roy Richards, Const. Supt.

Schedules 2B and 2S, Western Pipe & Steel Co., L. L. White, Supt.

### (Dams)

Cajalco dam, The Griffith Co., Harry Davis, Gen. Supt.  
 Parker dam, J. F. Shea Co., Frank Crowe, Gen. Supt.; E. A. Moritz, Constr. Eng., U.S.B.R.

### (Pumping Plants)

Intake and Gene, Winston Bros. and Crowell, R. A. Crowell, Supt., F. T. Hillman, Engineer.  
 Iron Mountain, Wood and Bevanda; Grant Miner, Supt.  
 Eagle Mountain, L. E. Dixon Co.; C. G. Clapp, Supt.  
 Hayfield, Dixon and Case; Crawford Strohacker, Supt.





A drill crew working at the face of the main heading west of the Cabazon shaft in the San Jacinto tunnel. Water flow at the face when the picture was taken amounted to 75 gallons per minute.

## Pioneer Tunnels Aid San Jacinto Work

With excavation completed on all other tunnels on the main aqueduct, the driving of the San Jacinto tunnel is now attracting widespread interest among construction men and laymen alike.

Of particular interest is the employment of a pioneer tunnel as an aid in excavating the main tunnel sections. The District began the use of a pioneer tunnel in San Jacinto nearly a year ago, and the results have demonstrated the utility as well as the safety advantages of the auxiliary tunnel.

The pioneer tunnel is 10 ft. x 10 ft. in cross section and runs parallel to the main headings. It is being used in both the Cabazon and Potrero headings, and in both cases is south, and approximately 75 feet from the larger tunnel.

The advance headings serve the dual purpose of exploring out the ground ahead of the main headings, and also providing accesses ahead of the larger faces so that difficult ground may be worked on from additional faces.

The latter use of the pioneer is being taken advantage of now in the Potrero heading. At the present time a crosscut has been driven from the pioneer back to the line of the main tunnel approximately 740 feet ahead (east) of the main heading. Excavation is now proceeding both east and west from this

crosscut on the line of the main tunnel, as well as continuing at the original working face.

It is interesting to note that the accident frequency in San Jacinto was reduced 58% in 1936 as compared with 1935, and is 41% below the average experienced in all California tunnels between 1925 and 1929.

## Revised Prospectus Now Available

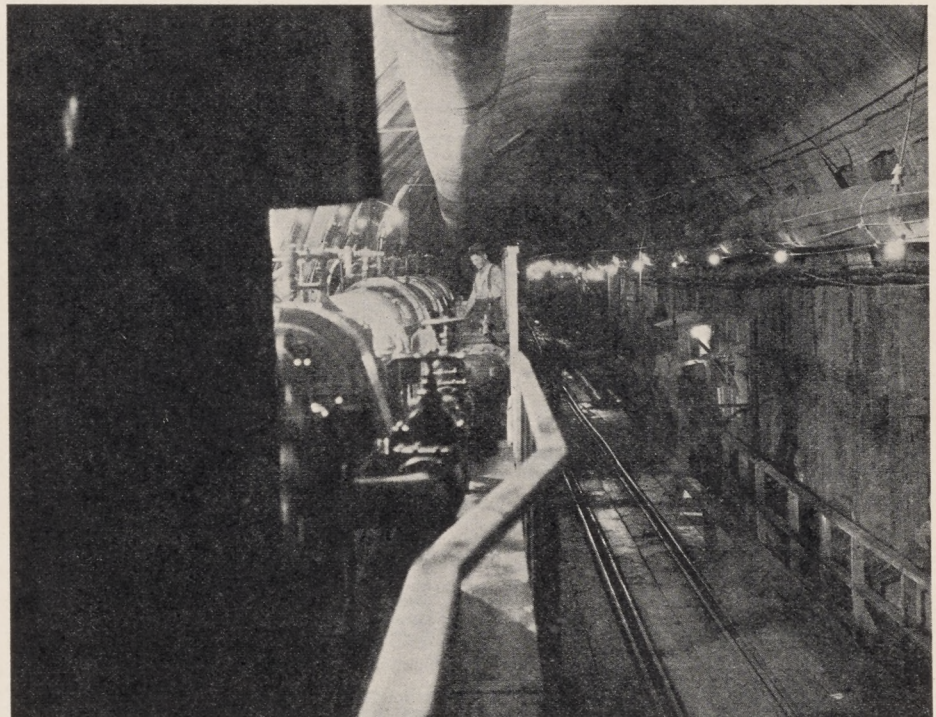
Just off the press, the third edition of "Colorado River Aqueduct"—a prospectus concerning the Metropolitan Water District and the Aqueduct, is now available to interested parties.

This 67-page handbook is considered the most authoritative manual obtainable on the Metropolitan Aqueduct project. Written by Julian Hinds, Assistant Chief Engineer of the District, the booklet was first published in 1935. The present issue follows the same general form as those previously published but has brought all pertinent facts and progress data up to date—all figures being as of February 28, 1937.

Summarized in its heading is the scope of the prospectus, "Colorado River Aqueduct—The Need, Engineering Features, Financial Status, and Progress of the Project."

Containing fifteen sections ranging from a general description of the aqueduct, to the "Care of the Workers," the book is illustrated with more than eighty pictures showing the latest construction features of the project. In addition there are numerous maps, graphs, and tables concerning the many phases of the District and the construction work.

The revised prospectus may be obtained from the District at its main office, 306 W. 3rd St., Los Angeles.



Booster pumping station in the main section of the San Jacinto tunnel west of the Cabazon shaft. This plant has a capacity to pump 20,000 gallons per minute, and is 8,817 feet west of the crossdrift running from the shaft to the tunnel.



# CONSTRUCTION

## TUNNELS

### TUNNEL EXCAVATION (MILES)

	Completed	Remaining
Aqueduct	87.46	4.65
Distribution	16.20	0
Total	103.66	4.65

March 1 to March 31, 1937

### \*TUNNEL LINING (MILES)

	Completed	Remaining
Aqueduct	81.81	10.30
Distribution	8.66	7.49
Total	90.47	17.79

\*Arch considered to equal 0.9 completed section.

### TUNNEL PROGRESS

CONTRACTOR	TUNNEL	LENGTH IN FEET	EXCAVATION IN FEET					LINING IN FEET					
			NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAIN- ING	ARCH OR INVERT	NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAIN ING
AQUEDUCT—CONTRACT													
WINSTON BROTHERS	COXCOMB (From E. Portal)	17,795		Completed		17,795	0	{ Arch Invert	49	362.5	0 17,764	17,795 17,764	0 31
BRODERICK & GORDON	E. EAGLE (From W. Portal)	9,440		Completed		9,440	0	Arch			0	9,440	0
	W. EAGLE (E. PORTION)	(15,845)		Completed		(15,845)	(0)	Invert			0	0	9,440
	East from Adit	7,871				7,871	0	Arch			0	15,845	0
	West from Adit	7,974				7,974	0	Invert			0	15,845	0
	TOTALS	Ft. Miles	43,080 (8.16)			43,080 (8.16)	0	Arch Invert	0 49	0 362.5	0 17,764	43,080 33,609	0 9,471

### AQUEDUCT — FORCE ACCOUNT

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	EAST COACHELLA	(96,605)				(96,605)	0	{ Arch Invert	1 41 19	375.0 74.5 375.0	0 383 3,053 7,117	28,512 28,512 68,093 40,629	0 0 0 27,464	
	East Portion	28,512			Completed	28,512	0							
	West Portion	68,093			Completed	68,093	0							
	SAN JACINTO	(68,849)			(733)	(44,298)	(24,551)	{ Arch Invert	73 0	34.2 0	(2,248) 2,498 0	(18,156) 3,544 130	(50,693) 5,336 8,750	
	Cabazon Shaft to East Portal	8,880			Completed	8,880	0							
	Cabazon to Lawrence	26,817	93	6.5	602	13,326	13,491							
	Cabazon Pioneer	18,119	93	7.2	670	4,880	13,239							
	Lawrence Adit	5,651	93	3.2	301	3,197	2,454							
	Potrero Pioneer	15,163	89	0.2	16	4,935	10,228							
	Potrero to Lawrence	17,670	89	1.5	131	6,610	11,060	{ Arch Invert	0 0	0 0	0 0	14,953 14,953	529 529	
	Potrero Shaft to West Portal	15,482			Completed	15,482	0							
	TOTALS	Ft. Miles	165,454 (31.34)	182	4.0	733 (0.14)	140,903 (26.69)	24,551 (4.65)	Arch Invert	114 20	48.7 375.0	5,551 7,500	115,102 84,224	50,352 81,230

### DISTRIBUTION—CONTRACT

GRIFFITH CO.	CAJALCO OUTLET	2,368		Completed	2,368	0					0	2,344		
WEST CONSTRUCTION CO.	MONROVIA NO. 1 (From W.P.)	7,868		Completed	7,868	0					7,796	0		
	MONROVIA NO. 2 (From Jct.1)	940		Completed	940	0					856	0		
	MONROVIA NO. 3	(32,105)		Completed	(32,105)	(0)	81	37.3	3,020		8,661	23,433		
	East from Adit	11,340			11,340	0								
	West from Adit } From West Portal }	20,765			5,913 } 14,851 }	0								
DIXON, BENT BROS. & JOHNSON	MONROVIA NO. 4(From W.P.)	8,133	43	8.7	375	8,133	0				0	8,133		
	PASADENA (From West Portal)	12,140		Completed	12,140	0	39	23.3	908		12,118	0		
	SAN RAFAEL No. 1 (From W.P.)	4,047		Completed	4,047	0	54	19.2	1,036		4,028	0		
	SAN RAFAEL No. 2 (From E.P.)	5,669		Completed	5,669	0					0	5,661		
	TOTALS	Ft. Miles	73,270 13.88	43	8.7	375 (0.07)	73,270 (13.88)	0	Full Section	174	28.5	4,964 (0.94)	33,459 (6.34)	39,571 (7.49)

### COMPLETED TUNNELS

CONTRACTOR	TUNNEL	Length in Miles	Work Started	Work Completed
AQUEDUCT	MORRISON-KNUDSEN CO.	Mecca Pass, No. 1, 2 & 3	1.13	7-17-33
	WEST CONSTRUCTION CO.	Whitewater Nos. 1 & 2	1.94	7-18-33
	SHOFNER & GORDON	Hayfield No. 2	1.03	7-8-33
	HAMILTON & GLEASON	Bernasconi	1.18	4-19-33
	J. F. SHEA CO., INC.	Cottonwood	3.81	6-14-33
	HUNKIN-CONKEY CON. CO.	Hayfield No. 1	1.84	10-21-33
	DIXON & BENT BROS.	W. Eagle—West Portion	2.02	9-8-33
	DRAVO CONTRACTING CO.	Valverde	7.20	6-7-33
	WALSH CONSTRUCTION CO.	Colorado River	1.04	3-2-34
	WALSH CONSTRUCTION CO.	Copper Basin Nos. 1 & 2	2.32	10-4-33
	WALSH CONSTRUCTION CO.	Whipple Mountain	6.11	8-25-33
	UTAH CONSTRUCTION CO.	Iron Mt.—West Portion	3.07	5-15-33
	WINSTON BROS. CO.	Iron Mt.—East Portion	4.48	8-9-33
	METRO. WATER DIST.	1000 Palms No. 1	3.04	1-25-33
	" " "	1000 Palms No. 2	0.73	2-24-33
	" " "	Wide Canyon No. 1	2.71	3-31-33
	" " "	Wide Canyon No. 2	0.16	3-24-33
	" " "	Seven Palms	3.17	4-27-33
	" " "	Long Canyon	2.90	3-6-34
	" " "	Blind Canyon	1.29	3-22-34
	" " "	Morongo No. 1	1.08	4-21-34
	" " "	Morongo No. 2	0.36	12-29-34
	TOTALS	52.61		
DISTRIBUTION	J. F. SHEA CO., INC.	Sierra Madre	1.27	9-1-35
	DIXON, BENT BROS. & JOHNSON	Pasadena Extension	1.05	10-5-35
	TOTALS	2.32		10-31-36 11-24-36



# ION PROGRESS

## CANAL, CONDUIT, SIPHON & PIPE LINES

CANAL, CONDUIT AND SIPHON (MILES)  
Completed Remaining

Excavation	134.75	10.91
Concrete	131.61	14.05
Back Fill	64.34	17.53

DISTRIBUTION PIPE LINE (MILES)  
Completed Remaining

Excavation	29.50	16.81
Concrete	27.40	18.91
Back Fill	26.70	19.61

March 14 to March 27, 1937

### AQUEDUCT

SCHED. NO.	CONTRACTOR	FEATURES	Length In Feet	EXCAVATION—Feet			CONCRETE—Feet			BACKFILL—Feet		
				Period	To Date	Remain'g	Period	To Date	Remain'g	Period	To Date	Remain'g
1	AQUEDUCT CONSTR. CO.	Conduit and Siphons	22,025	0	22,025	0	0	22,025	0	0	22,025	0
2	BARRETT & HILP	Conduit and Siphons	30,569	0	30,569	0	1,103	29,456	1,113	0	28,465	2,104
3	AND MACCO CORP.	Canal and Siphons	40,499	0	40,499	0	0	40,499	0	0	11,551	794
6	WOOD AND BEVANDA	Siphon	15,521	0	15,521	0	0	15,521	0	0	13,843	2,478
7	BARRETT & HILP & MACCO CORP.	Canal and Conduit	27,707	0	27,707	0	0	27,707	0	0	12,170	0
8	WOOD AND BEVANDA	Canal and Siphons	49,339	0	49,339	0	0	49,339	0	0	7,090	800
9	UTAH CONSTRUCTION CO.	Canal, Conduit and Siphons	47,363	0	47,363	0	0	47,363	0	0	5,264	935
10		Canal and Siphons	44,505	0	44,505	0	0	44,505	0	0	3,594	1,256
11	AQUEDUCT CONSTR. CO.	Canal, Conduit and Siphons	44,003	0	43,460	543	843	42,331	1,672	900	6,543	3,780
12	THREE COMPANIES, INC.	Conduit and Siphons	32,977	227	31,837	1,140	849	25,912	7,065	0	23,030	9,947
13	AQUEDUCT CONSTR. CO.	Canal, Conduit and Siphons	31,965	0	31,965	0	0	31,965	0	15	2,610	1,055
14		Conduit and Siphons	32,366	0	32,366	0	0	32,366	0	0	32,366	0
15	THOMPSON-STARRETT CO.	Conduit and Siphons	35,849	1,419	31,706	4,143	2,308	28,870	6,979	1,575	25,758	10,091
16		Conduit and Siphons	19,359	0	0	19,359	0	0	19,359	0	0	19,359
17	M. W. D.—FORCE ACCT.	Conduit and Siphons	21,952	0	21,952	0	156	21,952	0	112	21,335	617
18	J. F. SHEA CO., INC.	Conduit and Siphons	27,537	0	27,537	0	101	27,537	0	0	26,582	955
19		Conduit and Siphons	37,364	2,477	4,978	32,386	176	176	37,188	0	0	37,364
20	J. F. SHEA CO., INC.	Siphons	18,618	0	18,618	0	0	18,618	0	0	18,618	0
20 A & B	M. W. D.—FORCE ACCT.	Siphons	735	0	705	30	0	0	735	0	0	735
3	WINSTON BROS. CO.	Siphon (Gene Inlet)	1,877	0	1,877	0	9	1,854	23	0	1,478	320
4	& WILLIAM C. CROWELL	Siphon (Copper Basin)	450	0	450	0	81	378	72	0	0	0
	TOTALS		582,580	4,123	524,979	57,601	5,626	508,374	74,206	2,602	261,522	92,590

### DISTRIBUTION PIPE LINES

1	AMER. CONC. & STL. PIPE CO.	Precast Concrete Pipe	12,277	0	0	12,277	0	0	12,277	0	0	12,277
2	WESTERN PIPE & STL. CO.	Welded Steel Pipe	54,530	125	40,221	14,309	0	29,829	24,701	0	29,231	25,299
3	AMER. CONC. & STL. PIPE CO.	Precast Concrete Pipe	20,124	1,875	2,800	17,324	2,004	2,716	17,408	1,850	2,180	17,944
4			25,867	0	25,867	0	0	25,867	0	0	25,867	0
5			24,892	0	24,892	0	0	24,892	0	0	24,892	0
6	J. F. SHEA CO., Inc.	Precast Concrete Pipe	27,294	255	27,294	0	545	27,294	0	1,500	26,603	691
7			30,044	1,795	1,849	28,195	1,673	1,673	28,371	0	0	30,044
9	UNITED CONC. PIPE CORP.	Precast Concrete Pipe	8,697	0	0	8,697	0	0	8,697	0	0	8,697
10			10,517	1,132	8,312	2,205	711	7,849	2,668	1,636	7,692	2,825
11			4,105	0	0	4,105	0	0	4,105	0	0	4,105
8C-9C-12C	BASICH BROTHERS	Cast-in-Place Conc. Pipe	1,656	0	0	1,656	0	0	1,656	0	0	1,656
	TOTALS		220,003	5,182	131,235	88,768	4,933	120,120	99,883	4,986	116,465	103,538

## Miscellaneous Construction

March 14 to March 27, 1937

### AQUEDUCT PUMPING PLANTS AND APPURTENANT WORKS

CONTRACTOR	FEATURES	EXCAVATION—Cu. Yds.				CONCRETE—Cu. Yds.				STEEL—Tons			
		Est. Quan.	Period	To Date	%	Est. Quan.	Period	To Date	%	Est. Quan.	Period	To Date	%
WINSTON BROS. CO. & WILLIAM C. CROWELL	Intake Plant	109,412	520	106,945	98	17,647	1,363	15,248	86	1,470	50.4	743.5	51
	Gene Plant	87,256	0	87,239	99	14,700	1,209	12,844	87	2,086	78.9	1573.3	75
WOOD AND BEVANDA	Iron Mt. Plant	376,513	19,640	310,995	82	20,937	760	16,345	78	1,606	70.3	994.0	62
L. E. DIXON CO.	Eagle Plant	271,560	3,858	236,225	87	23,281	1,764	9,179	32	2,133	53.1	337.9	16
L. E. Dixon & Case Const. Co.	Hayfield Plant	330,400	6,909	309,336	94	19,672	591	763	4	1,525	62.3	76.0	5
	TOTALS		30,927	1,050,740			5,687	54,379			315.0	3724.7	

### PARKER RESERVOIR—SIX COMPANIES, INC.

FEATURES	Est. Quan.	Period	To Date	Percent
Diversion Tunnels—Excav.	3,463 Ft.	0	3,463	100
Diversion Tunnels—Concrete	3,363 Ft.	0	3,363	100
Dam, Forebay, etc., Excav.	2,182,700 C.Y.	106,400	1,477,437	67.7
Concrete	278,500 C.Y.	170	618	0.2

### CAJALCO RESERVOIR—GRIFFITH COMPANY

FEATURES	Est. Quan.	Period	To Date	Percent
Diversion Tunnel	2,000 Ft.	0	2,000	100
Dam & Dike Excavation	651,000 C.Y.	16,050	534,662	82.1
Dike Fill	4,182,000 C.Y.	9,600	3,701,100	88.5
Dam Fill	3,410,000 C.Y.	6,900	995,380	29.2

### BOULDER TRANSMISSION LINE—FRITZ ZIEBARTH

FEATURES	Length-Line MI.	Period	To Date	Percent
Footings Constructed	237.0	2	234	98.7
Towers Erected	237.0	9	226	95.3
Wire Strung	237.0	7	190	80.2

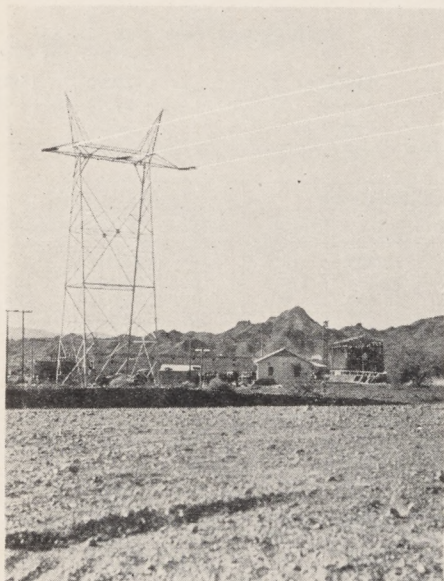
### COMPLETED—DISTRIBUTION PIPE LINES

CONTRACTOR	Schedules	Length in Mi.	Work Started	Work Completed
UNITED CONC. PIPE CORP.	Schedule No. 8	4.65	2-21-36	3-20-37

### COMPLETED FEATURES—AQUEDUCT CANAL, CONDUIT AND SIPHON

CONTRACTOR	FEATURE AND NAME OR SCHEDULE	Length in Miles	Work Started	Work Completed
UNITED CONC. PIPE CO.	LITTLE MORONGO SIPHON	0.13	2-27-34	8-20-34
M.W.D.—FORCE ACCT.	FAN HILL COND. & SIPHON	0.32	10-21-33	11-19-34
MORRISON-KNUDSEN CO.	BIG MORONGO & SAN ANDREAS SIPHONS	1.86	2-12-35	9-16-36
GRIFFITH COMPANY	Sch. No. 20-C, 21, 22, 23, 23A	12.79	1-5-35	10-13-36
JAHN & BRESSI Const. Co.	Sch. No. 5, CANAL & SIPHON	10.15	12-18-34	11-17-36
JAHN & BRESSI Const't Co.	Sch. No. 4, CANAL & SIPHON	10.08	6-6-35	3-18-37
	TOTALS	35.33		





END OF THE LINE.

This is the last tower on the Gene leg of the District's 230 kv transmission line from Boulder Dam to the aqueduct pumping plants. The Gene pumping plant is seen in the right of the picture.

## Wire Strung On Gene Leg of 230 kv Line

The Ziebarth crews made a celebration out of April 1, but they weren't "fooling" because on that day they completed the stringing of conductor on the Gene leg of the 230 kv transmission line.

This part of the Boulder Transmission line extends from the switching station at Camino to the Gene pumping plant, a distance of 60 miles. Work on the big power transmission line was started on December 1, 1935. At the present time a total of 228 miles of towers have been erected, and 193 miles of conductor have been strung.

Wire is now strung from Boulder Dam to the Iron Mt. pumping plant (via Camino) as well as the line from the switching point to the Gene plant. Eventually the M.W.D. transmission system will carry 36 per cent of the firm horsepower generated at the big dam, making the District the largest single user of electric energy from this source.

Between the Gene and Intake pumping plants, a distance of 2.11 miles, a smaller capacity line is now under construction. This line will carry electric energy at 69,000 volts and is being built by the District on a force account basis. The conductor will be aluminum, and the towers the same size as on the larger line, although the "bridge" on these towers has been re-designed.

## Sixty-three Miles of Canals Lined

When the Aqueduct Construction Company crews completed the placing of concrete canal lining in Schedule 11 on March 12, they not only completed that part of that particular job, but marked the completion of all canal lining work on the Metropolitan Aqueduct.

This work has been particularly interesting because of the new types of equipment which were developed for its construction, and the speed and efficiency with which this equipment operated.

Open lined canals are cheaper to construct than other types of conduit, and require less fall for their operation. Much of the country east of Hayfield is relatively flat and easily adapted to canal construction. For these reasons, this type of construction has been used in that area whenever permissible. The typical canal section constructed on the aqueduct is 55 feet wide at the top, is 11.71 feet deep, and is 20 feet wide at the bottom, and is lined with concrete 8 inches thick on the bottom of the canal and tapering to 6 inches in thickness on the top of the sloping sides. This lining is reinforced with steel. The designed velocity of the canals is 4.45 feet per second.

Approximately 500 acres of concrete was required to line the 63 miles of canal. Because of the large amount of concrete to be placed, as well as the accuracy with which the canal sections had to be excavated and trimmed, the various aqueduct contractors who handled the work developed new types of machinery for doing this work.

These machines were a canal trimmer; a canal paving machine; and a canal finishing jumbo. Various contractors brought out special developments of these three types, all of which, however, accomplished the same end.

Narrow gage tracks were laid along both banks of the rough canal excavation after the draglines and shovels had completed their work. The trimmer, paver, and finishing jumbo, which were in effect portable bridges, were then suspended above the canal and moved along on the tracks. The paving machines moved forward at rates as high as one foot per minute. One machine placed 944 lineal feet of canal lining in a single, two-shift, day.

Firms having contracts for aqueduct canal sections include the following: Barrett, Hilp, Macco; Jahn and Bressi; Wood and Bevanda; Utah Construction Co.; and Aqueduct Construction Co.

### THE COVER

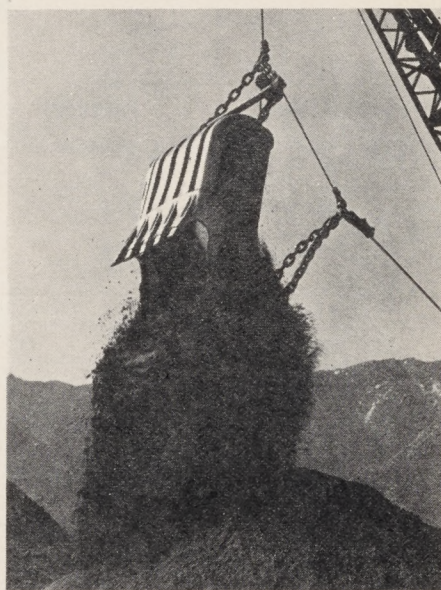
The picture on the cover of this issue of the NEWS is looking upstream, or north, at the site of the Copper Basin Dam in Division 1. The dam will have its south abutment just behind the left canyon wall seen in the picture. The north abutment of the dam will be against the canyon wall at the approximate position of the ladder in the center of the picture. The rock formation is known as Copper Basin sandstone. When completed, the dam blocking this narrow gorge will be 210 feet high, 210 feet wide at its top, and 25 feet wide at its base. The Copper Basin reservoir which will be formed back of the dam is six miles west of the aqueduct intake on the Colorado River. Water will flow into the reservoir from the Copper Basin tunnel No. 2, and will drain into the Whipple Mountain tunnel. The District recently awarded a contract to the J. F. Shea Company for the construction of the Copper Basin and Gene Wash dams, both of which will be concrete arch dams.

### SAFETY NOTES

S. H. Ash, District Engineer, United States Bureau of Mines, was in Banning on March 24 and conferred with M.W.D. Safety Engineer Osgood regarding plans now under way for conducting cooperative First-Aid Training courses for aqueduct workers.

\* \* \*

J. W. Gebb, Assistant Chief, and J. C. Hoyt, Mining Engineer, of the Safety Department, State of California Industrial Accident Commission, were in Banning for three days recently in connection with safety matters on the San Jacinto tunnel.



Attention slide rule artists. This bucket working on Schedule 19 (J. F. Shea Co.), holds 3 cu. yds., and requires 45 seconds to load and dump. There are 1,500,000 yds. of excavation on the schedule. How long will it take?



# NEWS FROM FIELD AND OFFICE

Maynard Anderson resigned from the District on March 31, to go in the contracting business with his father in San Diego. Maynard has been in the Los Angeles office of the Distribution Division since 1934 as a Junior Engineer. Prior to that time he had been with the engineering forces in Divisions 2 and 4.



Newlyweds. Inspector Robert H. Cordill (M.W.D. Division 2) and his bride, the former Miss Caroline Wolcott of Culver City. Scene—Parker, Arizona.

Spring flowers and spring romances are still blooming along the aqueduct line. (See picture above.)

Recent converts to the "two can live as cheaply as one" theory were Robert H. Cordill, M.W.D. inspector on Division 2, and Miss Caroline Wolcott of Culver City. They were married in Parker, Arizona, on March 27. Bob Evans, Superintendent for Barrett, Hilp, and Macco, acted as the best man.

\* \* \*

The following transfers of M.W.D. employees were made during the period March 15 to 31:

Inspector Wilson A. Pratt from Division 4 to Distribution.

Storekeeper Wm F. Dickinson from Division 4 to Banning.

Chainman E. L. Civerolo from Division 4 to Division 3.

Inspector Edmund Sallows from Division 4 to Division 3.

Master Mechanic John H. Schweer from Division 5 to Division 3.

## Aqueduct Temperatures

March 16 to March 31

	Max.	Min.
Div. 1 .....	86°	41°
Div. 2 .....	87°	41°
Div. 3 .....	85°	46°
Div. 4 .....	80°	42°
Divs. 5 and 6.....	76°	27°

"Mother and baby are doing fine—condition of father still doubtful" is the substance of a flash from Thermal which reports the arrival in the Charles Caldwell household of an heir on March 30. Vital statistics: Weight 6 lbs. 13¾ ounces (some day some papa is going to invent a scale that will really give the accurate weight of their heirs); name, James Seymore Caldwell. "Charley" Caldwell is with the M.W.D. engineers on Division 4.

\* \* \*

West Iron Mountain Employees of the Utah Construction Company celebrated Easter Sunday with a Sunrise Service on "Easter Hill". In addition to religious singing by the entire group, there were readings by Mrs. John Armelin and C. J. Johnson.



This skilled craftsman is Tavner B. Stewart, pattern maker for the M.W.D. in the San Jacinto shops. He has been with the District for a year, having been previously employed by the Griffith Co. He made the first sectional transition forms used on the aqueduct. Has been in the wood working trade since he was 14 years old.

General Manager Weymouth returned to Los Angeles on April 6 after a trip to Washington, D. C., where he was engaged in District business.

\* \* \*

The buildings of the Walsh Construction Co.'s Whipple Mt. camp have been dismantled and moved to Blythe, Calif.



Three of the Cabazoneers of San Jacinto tunnel. Superintendent C. E. "Tim" Sides, Shifter Earl Carrol (day shift), and General Foreman Louis "Louie" Zeppi.

Still another couple taking the leap were Pete Leal of the L. A. Mails and Files and Division, and Miss Jenny Parisi, of Bell, who were married on Saturday, April 3. Pete is the chap who showed the District's new picture "Empire of the West" in the various Division headquarters during the week April 5 to 10. If the picture ran backwards, or upside down, or didn't run at all—the above explanation of Pete's state of mind may have had something to do with it. His bride accompanied him on the expedition into the wild country east of Broadway where even a man that has been married 10 days or more is apt to find the going kinda rough.

\* \* \*

Charlie Pankratz, General Foreman at Wide Camp on Division 4, was treated to an enjoyable surprise party in Banning on March 24 when a group of the men who have been working with him presented him with an engraved gold medal.



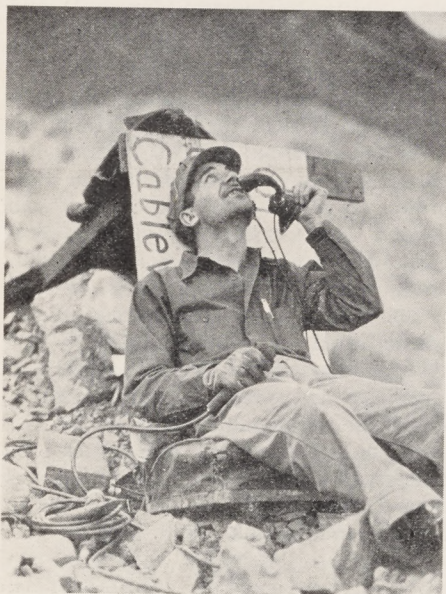
## Parker Dam Reaches 'Spectacular' Stage

"More spectacular than Boulder Dam," is the opinion of Frank Crowe concerning the construction of the Parker Dam. Crowe ought to know since he was the General Superintendent for the Six Companies on the building of Boulder, and now occupies the same position for the J. F. Shea Company at Parker Dam.

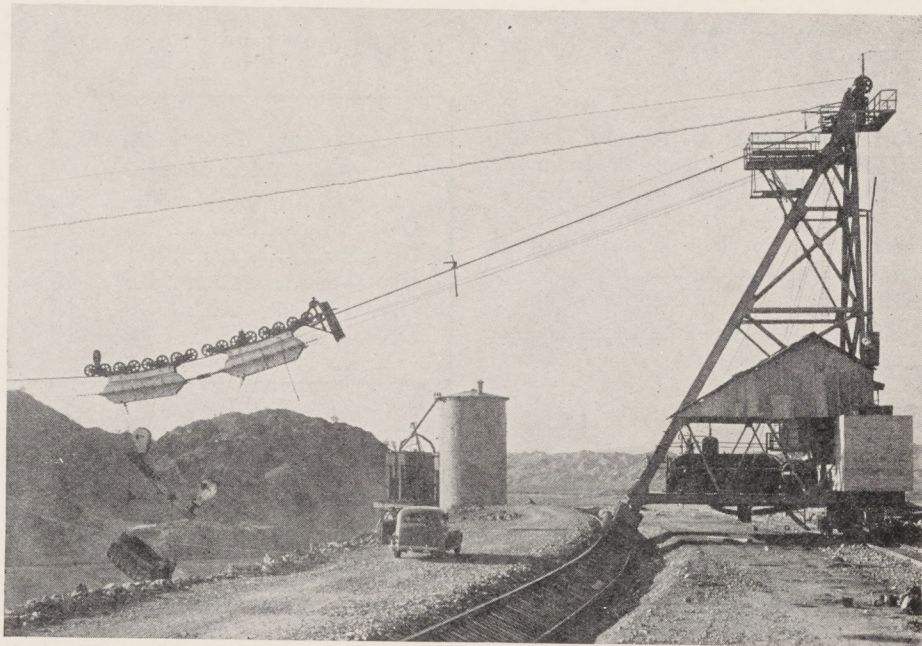
Because of the depth (approximately 250 feet) below the river bed which must be excavated in order to reach a bedrock foundation, the hole being dug out at the eastern end of the aqueduct is rapidly reaching the proportions of a second Grand Canyon. On April 3, this excavation was 128 feet below the normal water surface of the river, approximately the same depth below the river surface that the canyon walls rise above it. A twenty-four story office building could now hide in the hole, and there is still over a hundred feet to go.

Looking up from the bottom of the excavation—the top of the upstream cofferdam appears as a lofty skyline, although it is only 80 feet above stream level. Trucks and equipment going down into the excavation have to use six stages, or ramps.

Overhead cableways, the same used at Boulder Dam, are now being used to lift excavated material out of the hole.



According to Frank Crowe, General Superintendent on the Construction of Parker Dam, this is the only man working on the job who makes his living lying down. He is "Happy" Hepner, signal puncher, directing the operation of the skip on the cross canyon cableway.

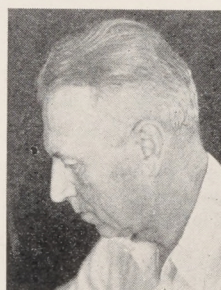


One of the two traveling towers that handle the cableways across Parker Dam construction work. They are on the Arizona side of the canyon.

## Who's Who On the Aqueduct



Vincent Bressi



C. L. Smith



J. A. Saunders

### VINCENT BRESSI

*Jahn and Bressi Construction Co.*

Born in Italy in 1887. . . . Came to the United States in 1907 and later became a citizen of this country. . . . Lists "School of Experience" as his alma mater. . . . Has been in the heavy construction industry for twenty-five years. . . . Principal work in connection with building of water supply systems, tunnels, highways, and dams. . . . Is President of the Jahn and Bressi Const. Co. (M. W. D. Schedules 4 and 5). Married and has three daughters.

### C. L. SMITH

*Resident Engineer,*

*Hayfield Pumping Plant, M. W. D.*

Born in Aurora, Neb., September 19, 1882. . . . Graduate of Nevada State University, Mackay School of Mines, 1905. . . . Has had 32 years of varied types of engineering experience including civil, tunnel and mining, power plant, industrial, and construction engineering.

. . . Chief of party on the Los Angeles Aqueduct in 1911, and was water commissioner for State of Nevada. . . . 14 years mining experience in various western states. . . . With Stone and Webster on Power and Industrial plant construction. . . . With M.W.D. since 1933. . . . Married, has a son, and a daughter.

### J. A. SAUNDERS

*Assistant Supt., Griffith Co., Cajalco*

Born July 16, 1891, Atlanta, Georgia. . . . 1911-15, Ford and Stout, L. A. street construction. . . . '16-'17, Los Angeles Paving Co. . . . 1918, U. S. Army, Corps of Engineers. . . . 1919-34, Griffith Co., street and state highway construction. . . . 1935, General Foreman, same company, M.W.D. Schedules 20A, 20B, 20C, 21, 22, 23, and 23A. . . . Assistant Superintendent at Cajalco since August, 1935. . . . Nickname is "Slim." . . . Is married. . . . Hobbies are hunting and fishing.